SAUGET SEWER REHABILITATION PHASE I, II, IIIA

BID EVALUATION

Based on the Scope of Work as outlined in the Facilities Plan and Infiltration - Inflow Analysis, the plans and specifications were prepared and bids were received in the office of the City Clerk on December 19, 1985. A copy of the bid tabulation sheet is attached. The bid tabulation sheet shows that with the exception of Tarlton the bids received are tightly grouped within 11% of each other, indicating an understanding of the work specified.

In an effort to reduce unknowns and risk so the contractor may submit better bids, the plans and specifications were produced thoroughly and clarified by addenda. A Pre-bid Conference was held to entertain questions which yielded a better understanding of the plans and specifications. The contractors that we received bids from were qualified contractors, having experience in this type work.

The funds available for this project ($4.22 million) were based on estimates from the Facilities Plan and Infiltration - Inflow Analysis (Feb 1984). The bids received were approximately $1.1 million over budget. Several items were added to the scope of the work after the budget was established:

1) The relocation of both an acid and a benzene line added approximately $245,000.

2) The addition of a furan membrane to the boxes for acid resistivity added approximately $200,000.

Other items that indirectly added to the cost was a bad experience factor for projects in the Village with contractors bidding the work along with the high risk that this acid proof construction carries because of tolerances and precautions.

The criteria used for design was established by the Facilities Plan and Infiltration - Inflow Analysis, which was done in association with various engineering personnel for the Industries. The basis was to establish three active reliable lines beneath the railroad tracks connecting the plants to the treatment facility. The ability to divert this flow from the north lines to the south lines was deemed necessary. This would allow for ample capacity during the repair of one sewer line or a manhole.

Because the bid price has exceeded our budgeted amount we have investigated many alternates to the optimum design. In order to reduce costs we must either change the method or reduce the amount of work to be done. The methods of constructing the manholes and the pipes were reviewed and it was determined that we are left with little choice in dealing with acid proof construction. The pipe joints have been tested several ways with

WGK 1484134

the optimum being a full furan ceramic fiber reinforced mortar joint. The manholes utilizing acid brick and furan brick mortar have been standarized in the acid sewer industry. We must therefore reduce the amount of work to be done by either utilizing alternate methods of a system layout, which would constitute redesign and sacrificing options in the future or to eliminate work from the current design that is not critical at the present time but may be set up to accept future work.

Two alternate methods (attached) have evolved from investigation to satisfy the above criteria. They are not as desirable as the design as set forth in the bid package but an acceptable compromise. Both Alternate 1 ($4.6 million) and Alternate 2 ($4.2 million) estimates are based on actual unit prices received times a factor of 1.44 (contractor price/PHW estimate). Although Alternate 1 is more costly, it allows the possible option of making a change order of 11% to the bid price. The legality of making a change order of this magnitude should be investigated by the Village Attorney. Minor engineering changes are required. Alternate 2 is estimated closest to the budget but has some uncertainty that when rebid an add of approximately $200,000 may be seen due to the add for open excavation by four contractors to the current bids. Open excavation of the 36" VCP seems to be the solution in Alternate 2. The engineering design changes would amount to approximately $50,000.

Investigation is underway as to where and how government funding can be received with the possibility of using the existing design.

January 17, 1986

AGENDA
REVIEW VILLAGE OF SAUGET SEWER REHABILITATION PROJECT
PHASES I, II, AND IIIa - JANUARY 17, 1986

I. Review Original Project Objectives

II. Project as Designed - Phases I, II, and IIIa

A. Scope of Work
B. Advantages/Disadvantages
C. Bids, Engineer's Estimate, Unit Price Estimate

III. Alternate 1 - I, II, and part of IIIa

A. Scope of Work
B. Advantages/Disadvantages
C. Cost Estimate

IV. Alternate 2 - IIIa and Modified II Agreement

A. Scope of Work
B. Advantages/Disadvantages
C. Cost Estimate

V. Form of Job Award

A. Options - Existing Bids
B. Rebid

1. Rescope per Alt 1
2. Delete Clean, TV, Grout,
3 Rebid
a Lamp San
b T and M not to exceed
Savings 50K?

VI. Grant Assistance

WGK 1484136

Village Sewers

Helmkamp
CONSTRUCTION CO.

510 ALTON—ST. LOUIS ROAD
WOOD RIVER, ILLINOIS 62095
PHONE 618/251-2600

December 20, 1985

Paul Sauget, Mayor
Village of Sauget
2297 Fallings Springs Rd.
Sauget, IL 62206

Reference: Sewer Rehabilitation
Phases I, II, IIIA

Gentlemen:

As you are aware, we did not submit pricing information for Alternate 3 and 4 on the above referenced project. This letter will serve to explain our position and reasoning for such action.

Alternate No. 3 to the base bid, requested a price modification to "utilize a precast furan concrete bullring to protect the connection between the pipe and the manhole in lieu of an acid brick bullring." We requested, and received several quotations from contractors qualified to install the acid brick system, none of whom quoted this alternate as specified. One contractor offered a deduct to install a cast-in-place furalec concrete bullring and when questioned about the deviation (cast-in-place vs precast) replied that it was impossible to achieve a tight and usable joint from the acid brick to the bullring and the bullring to the pipe using precast components. In our opinion, this suggested an unacceptable method of construction. Additionally, the cast-in-place method did not meet the alternate description, thereby leaving us with no option other than not to bid Alternate 3.

Alternate No. 4 requested a price and time differential from the base bid "for utilizing a large enough tunnel in both 349' of 42" VCP and 165' of 36" VCP to construct the entire joint in the tunnel with full furan tamping mix."

Our base bid is predicated on installing both the 36" and 42" VCP in a tunnel with a 96" inside diameter. It is our position that the tamped joint could effectively be installed within this tunnel if necessary. It is also our opinion that the sewer pipe could be more efficiently constructed by open-cut methods of construction in lieu of tunnelling, as may be evidenced by our deduct for Alternate No. 2.

WGK 1484137

We welcome the opportunity to discuss this project to insure you the best quality construction at the lowest contract price. If you have any questions or if additional information is required, please feel free to contact our office.

We trust our proposal will meet with your favorable approval and look forward to working with you in the near future.

Sincerely,

HELMKAMP CONSTRUCTION CO.

Gregory S. Lilley
Chief Estimator

CC: P.H. Weis
P.H. Weis & Associates

WGK 1484138

Village Sewers

SAUGET SEWER REHABILITATION PHASES I, II, IIIA
COST REDUCTION SYNOPSIS

In order to reduce costs we must either change the method or reduce the amount of work to be done. The methods of constructing the manholes and the pipes were reviewed and it was determined that we are left with little choice in dealing with acid proof construction. The pipe joints have been tested several ways with the optimum being a full furan ceramic fiber reinforced mortar joint. The manholes utilizing acid brick and furan brick mortar have been standardized in the acid sewer industry.

We must therefore reduce the amount of work to be done by either utilizing alternate methods of a system layout, which would constitute redesign and sacrificing options in the future or to eliminate work from the current design that is not critical at the present time but may be set up to accept future work. The design that was bid was done in conjunction with the industries in the area. A certain part of this design (Phase IIIA) may be eliminated from the present job to reduce cost without affecting the operation of the system.

Phase IIIA consists of installing a 36" VCP pipe to be tunnelled and repair and extend Manhole D to accept the twin 36" VCP from Manhole J through demolished Manhole G. By eliminating this part of the work we have decreased the capacity out of Manhole H and Manhole J but we still have the same number of lines leaving each manhole as we have entering each manhole. In a sense we have created a bulge (excess of capacity) in the center of the system but the influent still remains at 3-36" VCP's, 1-30" VCP and the effluent at 3-36" VCP's for the system.

In order for Phase IIIA to show it's true effectiveness in the first place the 36" VCP from Manhole D to B must be in good condition and that is an unknown at this point in time. A priority to Phase IIIA would then be Manhole D to Manhole B which may involve costly repairs or abandonment.

Phase IIIA does however allow us to abandon the settlement problem that we are encountering near the T.R.R.A. Box while giving us a third line beneath the tracks to carry capacity through that area provided that the 36" VCP from Manhole D to Manhole B is in service. Therefore, Phase IIIA should still be a consideration if more money can be allocated.

By eliminating the work done in Phase IIIA the system will be operating with a new 42" VCP (Manhole A to Manhole H), an existing 36" VCP said to be in good shape (Manhole I to Manhole C), a 36" VCP in questionable shape (Manhole D to Manhole B), and a 36" VCP with known settlement (Manhole E to Manhole B) to carry the influent (Manhole H, I, J) to the effluent (Manhole A, B, C) of the system until the T.R.R.A. Box can be eliminated with Phase IIIA.

The following estimations of the work to be eliminated are broken into two parts to show the savings to be gained by eliminating part of Phase IIIA and all of Phase IIIA. The estimations have been done by two methods to present a range. The first method was done utilizing actual bid unit prices which may not reflect all of the work involved in a contractor's price while the latter is a ratio of the contractor's bid price to the engineer's original estimate.

ELIMINATE PART OF PHASE IIIA
(HELMKAMP PRICES)

Removal of Box G	$ 15,000
Extension of Box D	
Concrete (27.86 cu.yds. @ $200.00/cu.yd.)	5,572
Forms (340 sq.ft. @ $12.50/sq.ft.)	10,500
Reinf. (5,300 lbs. @ $1.00/lb.)	5,300
Acid Brick & Membranes (360 sq. ft. @ $80.00/sq.ft.)	28,800
Exterior Membrane (270 sq.ft. @ $20.00/sq.ft.)	5,400
Volclay Panels (160 sq.ft. @ $5.00/sq.ft.)	800
Fiberglass Panels (120 sq.ft. @ $20.00/sq.ft.)	2,400
Removal of Existing Wall	10,000
Crushed Stone Base	1,000
Earthwork (4,700 cu.yds. @ $15.00/cu.yd.)	70,500
New 36" VCP (172 LF @ $400/LF)	68,800
Sheet Piling (2,500 sq.ft. @$30/sq.ft.)	75,000
Track Removal & Replacement (300 LF @ $85.00/LF)	25,500
Clean, Televise & Grout 2 - 36" VCP	
Cleaning & Televising (580 LF @ $76.50/LF)	44,370
Grouting & Testing (1933 gal. @ $11.00/gal.)	21,300
Remove Existing 30" VCP (30 LF @ $250.00/LF)	7,500
Remove Existing 36" VCP (100 LF @ $300.00/LF)	30,000
Install Bulkheads	5,000
Grout Existing 30" VCP (125 LF @ $40.00/LF)	5,000
Estimated Deduction	$ 437,742

WGK 1484141

ELIMINATE ALL OF PHASE IIIA
(HELMKAMP PRICES)

Removal of Box G	$ 15,000
Repair & Extension of Box D	
Concrete (31 cu.yds. @ $200.00/cu.yd.)	6,200
Forms (904 sq.ft. @ $12.50/sq.ft.)	11,300
Reinf. (5,800 lbs. @ $1.00/lb.)	5,800
Acid Brick & Membranes (656 sq.ft. @ $30.00/sq.ft.)	52,480
Exterior Membrane (495 sq.ft. @ $20.00/sq.ft.)	9,900
Volclay Panels (160 sq.ft. @ $5.00/sq.ft.)	800
Fiberglass Panels (176 sq.ft. @ $20.00/sq.ft.)	3,520
Removal of Wall & Top Slab	15,000
Crushed Stone Base	1,000
Patching Walls (13 batches @ $250.00/batch)	3,250
Bow Existing Walls & Floor	5,000
Riser & Collar	3,500
Top Slab on Riser	1,000
Earthwork (4,700 cu.yds. @ $15.00/cu.yd.)	70,500
Trench Excav. 36" VCP (200 LF @ $250.00/LF	50,000
New 36" VCP (372 LF @ $400.00/LF)	148,800
Sheet Piling (4,500 sq.ft. @ $30.00/sq.ft.)	135,000
Track Removal & Replacement (500 LF @ $85.00/LF)	42,500
Clean, Televise & Grout 2 - 36" VCP	
Cleaning & Televising (580 LF @ $76.50/LF)	44,370
Grouting & Testing (1,933 gal. @ $11.00/gal.)	21,300
Remove Existing 30" VCP (100 LF @ $250.00/LF)	25,000
Remove Existing 36" VCP (100 LF @ $300.00/LF)	30,000
Install Bulkheads	5,000
Grout Existing 30" VCP (125 LF @ $40.00/LF)	5,000
Removal of Manhole H	5,000
By-Pass Pumping	30,000
Open Excavate In Lieu of Tunnel (36")	25,000
Estimated Deduction	$ 771,220

WGK 1484142

ELIMINATE PART OF PHASE III A
(P. H. WEIS & ASSOC. REPORT)

Removal of Box G	$ 10,000
Extension of Box D	140,000
Installation of 2 - 36" VCP	143,000
Abandon 36" Lines	5,000
Clean, Televise & Grout 2 - 36" Lines	30,000
	328,000
	x 1.57**
Estimated Deduction	$ 515,000
New Base Bid Price	$ 4,815,000

** $\frac{\text{Helmkamp Price}}{\text{PHW Estimate}} = \frac{\$\ 5,330,000}{\$\ 3,400,000} = 1.57$

WGK 1484143

ELIMINATE ALL OF PHASE III A
(P. H. WEIS & ASSOC. REPORT)

Tunnel 36" Line Under Tracks	$ 224,000
Elimination of Manhole H & Connect to Box H	39,000
Elimination of Box G	10,000
Repair & Extend Box D	240,000
Install 2 - 36" Lines	143,000
Abandon 36" Lines	5,000
Clean, Televise & Grout 2 - 36" Lines	30,000
	691,000
	x 1.57 **
Estimated Deduction	$ 1,084,870
New Base Bid Price	$ 4,245,130

** $\frac{\text{Helmkamp Price}}{\text{PHW Estimate}} = \frac{\$\ 5,330,000}{\$\ 3,400,000} = 1.57$

WGK 1484144